

CHILD'S COGNITIVE MATURITY THROUGH MULTIMEDIA NOWADAYS

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Abstract

This paper focuses on analyzing the child's cognitive maturity through multimedia nowadays. It portrays two main topics namely: (1). The current development of a child's cognitive maturity and (2). The impacts of multimedia on a child's cognitive maturity. The grand theory used is the personal psychology of development. The theory specifies on the difference between millennial and alpha-beta generations on its psychological developments. By using library study, the researchers conduct a deep analysis about these developments. The result shows that there is a child's cognitive maturity after intensively using multimedia. The most realistic reason is it provides the learners no awareness in learning by default and enjoys delightful displays. Using multimedia in childhood learning accelerates a child's cognitive growth such as spatial cognitive, representative cognitive, iconic skills, problem solving, stimulating attention to the material and perception.

Keywords: cognitive maturity, multimedia, psychological developments, researchers

INTRODUCTION

Child cognitive development process begins from birth to adulthood. Each child has at least some developing elements such as physical appearance, motoric skill, cognitive maturity, social and language ability, emotions, individual personality and art intelligence, moral values and religious aspect (Latifa, 2017; Muris, 2020). The child gradually gets new abilities and skills that make their understanding of the world and their interactions within it. During the beginner stage, the children will try to interact outside and contact with others, whether pair, or grouping (Sinta, 2018; Muris, 2020). Of course, every child brings individual different characteristics. Let's say 'unique' that always grows rapidly. Therefore, child cognitive development is a complex and interesting area of study that explores how the children's thinking, problem-solving, memory, language, and other mental development processes as they grow and mature. Sometimes, the parents leave this stage because of several factors such as lower educational background, so that they have no idea how to lead and provide best service, unharmony parents cause them to lack attention to child-development and so on. In understanding cognitive growth, it needs to be careful to apply any strategies to support this case. In childhood, it is the early stage to determine the result in the future.

There are many factors that can influence a child's cognitive development. Here are several factors that can affect children's cognitive development, including biological, socio-economic, environmental, and psychosocial factors (Drago et al., 2020). Biological Factors play an important role in developing children's cognitive skills. These include child birth weight, nutrition, and infectious diseases (Murray-Kolb et al., 2018). Child birth weight is the weight of a baby at the time of birth. It is often considered an indicator of the baby's overall health and development. On the other hand, in a low budget family, it is most challenging to survive in providing good nutrition foods.

Socio-economic Factors: These include parental assets, income, and education (Drago et al., 2020). So, this factor plays a crucial role in developing children's cognitive development because children from families with higher socio-economic status tend to have better cognitive development outcomes because they have an easy access to better education. On the contrary, the children from families with lower socio-economic status tend to have worse cognitive development outcomes because they have difficulties in getting a good education and they struggle to reach a good education. Therefore, socio-economic factors have been frequently highlighted because many children are still struggling to attain good academic grades while some are finding it difficult to maintain their achieved grades (Oladipupo et al., 2017).

Environmental Factors: These include home environment, provision of appropriate play material, access to healthcare, and exposure to early learning experiences (Murray-Kolb et al., 2018). Children who are exposed to early learning experiences tend to have faster cognitive development. It also will affect the children's habit, behavior, problem solving and their social skills. It means the home environment quality significantly can influence cognitive development. The analyses of study conducted by Drago et al (2020) showed that an appropriate home environment (e.g., with clean, organized, hazard-free areas for children to play) where caregivers provide adequate stimulation (e.g., promoting recreational and learning materials and activities) may positively impact children's cognitive development. In this context, there is a big opportunity for stimulation and learning (e.g., presence of toys, books, and interactions with relatives) to be positively associated with children's cognitive development (Drago et al., 2020)

Psychosocial Factors: These include parental mental health, parent-child interactions, cognitive stimulation, and learning opportunities (Cooper et al., 2009). Psychosocial characteristics is commonly described as an individual's psychological development in relation to his/her social and cultural environment (Vizzotto et al, 2013). Children who have positive interactions with their parents and are exposed to cognitive stimulation and learning opportunities tend to have better cognitive development outcomes. That's way pra-parents education is necessary to prevent any struggles. Self-readiness, physics and mental skills are the main support to lead the children in harmony.

Other factors that can affect cognitive development is multimedia, as an external factor. Its impact on cognitive and socioemotional development can be moderated by factors such as a child's age and parental mediation (Swider-Cios et al., 2023). We know multimedia is part of Technologies (ICT). ICT grows fastest in this era, even it grows faster than economic development (Zorginbeeld, 2020), therefore knowledge and information are easy to get right now. By this improvement, giving birth to digital natives who have lived in the digital era since childhood. This situation establishes a new perspective and lifestyle which is influenced by ICT. Therefore, people today cannot be separated by ICT in any multimedia displays. Multimedia forms are used by many people, in essential activities such as work management, network designing, and digital education equipment. The childhood stage is a golden age to maximize opportunity to develop their cognitive aspect. Digital multimedia has accelerated some procedures in the learning process. Even teachers and parents help them increase the knowledge of students and their children in exciting and interesting displays.

There were many previous studies that have stated that multimedia can influence children's cognitive development. The study conducted by Sweader et al (2023) confirmed that young children are deeply immersed in digital technologies and the way

children interact with screen-based media during early childhood is constantly changing. The literature from the study shows that the use of screen-based media in early childhood have both positive and negative impacts toward children's cognitive and socioemotional development. Then the study describes the risks and benefits of screen-based media use on cognitive and socioemotional development by reviewing research findings published since 2010. Specifically, the study focuses on the influence of screen-based media on children between 0 and 5 years of age, as it is a period of accelerated brain development and emergence and growth of cognitive abilities within several cognitive domains. Then another previous study conducted by Farahsani (2020) which focused on toddler's language acquisition using YouTube. The study's result showed that children can start to learn English through YouTube by watching English songs. Their attraction in watching is followed by imitating the word, the way the characters sing, and also the manner. Then, the study conducted by Imaniah (2020) which aims to know the effect of Kids YouTube channels in building English communication skills in children. Using qualitative and quantitative methods, where the study used one-shot survey design as the instrument given to the participants. The study confirmed the parents' beliefs, attitudes, and behaviors towards YouTube Kids Channel; it is known that the selected channel can improve young children's communication skills, particularly in enriching their English vocabulary. The study stated that YouTube is believed to be an effective media that can improve young children's communication skills despite the parent's control. The audio-visual aspects of the YouTube channel have a significant role in improving young children's communication skills.

From the previous studies, the grand problem which is highlighted by the researcher is how multimedia can stimulate a child's cognitive maturity. Of course, each child must develop their intelligence. However, the researcher needs to analyze it to find out the validity result by doing this research. In this case the researcher referred to the previous research reports done by the other researchers. The study has been held by Athanasios Drigas et al. (2015) that described that multimedia and mobile offer a new education environment. It means that a child's skills can be increased by digital multimedia in learning. Unfortunately, this result still presented a general experience of child learning. So, this research must be conducted to specify a child's cognitive achievement. This research result may be representative or additional reference for those who have studied similar area's study. For example, readers, learners, parents and educational practitioners to give new insights and other references to open up knowledge relating to this context.

METHOD

This study uses qualitative data to describe and explain the result of research. Technically, the researchers take library study or analyze the result of previous research by comprehending several accredited and non accredited journals to support this research. Furthermore, researchers tend to learn child-development at pre-school until 12 years at elementary school. In childhood is the golden age for them to have an impeccable opportunity to stimulate their aptitude skills. Moreover, this moment is easy for the children to perfectly capture any kind of positive stimuli.

FINDINGS AND DISCUSSION

In Understanding of Child's Cognitive Development

Every human has the average number of synaptic connections in the third layer of the middle frontal gyrus growing from 10,000 to 100,000 between 0 - 12 months of age (Huttenlocher, 1979; Siegler 1989). Then, the process synapses density increased until age 2. These adult levels were completed by about age 7; from age 6 months to age 7 years, synaptic density in the children's brains outpace adult levels. It means that at age 7 has a whole brain. At the concrete operational level that normally grows between the ages of 7–12 years, children are able to consider more than one stimulus (Muris, 2002).

According to Suryana (2013; Siegler,1989) in early childhood, children have some characteristics, they are;

1. Full of curiosity to recognize the surroundings and achieve her own interests (egocentric).
2. The child thinks that the world is interesting and exciting, so they want to find out about it by him/herself.
3. Child has its own uniqueness as learning styles, interests and family background.
4. Boys will have a high imagination about the environment.
5. In early childhood, children do not have long attention for one thing. They very quickly turn out to the others that make them interested.

The findings above show that there are various factors that can affect children's cognitive development. Snyder (1977) said that internal and external factors are the factors which influence children's cognitive development. Internal factors are those that come from the inside of a child, such as genetics, temperament, and physical health. Whereas, External factors are the factors that come from outside the child, such as family environment, social and cultural influences, and the surrounding environment. In the technology era, the digital natives must be provided with suitable facilities and environment. So, the traditional way must be reconceptualized with the newest way.

The Define of Multimedia's Function for Child-Cognitive Maturity

Athanasios Drigas et al. (2015) claimed that multimedia is digital interactive tools with computer-based functions that can encourage the child's engagement in learning through texts, videos, pictures and animation. Excess of multimedia brings out a real illustration, just like a concrete environment. In other words, Mayer; Athanasios Drigas et al. (2015) states multimedia can be well-represented for childs to learn and comprehend more detail comprehending than traditional learning. After that, Fledman (1994) defines multimedia as packaging of data, picture, sound which brings digital information.

He also gave an additional statement of a multimedia system which has four factors such as it has a large memory; operating with technology; display text, numeric and delivering sound; rich and complex of digital information that can be accessed. Moreover, multimedia is an interactive tool that the user and system can give feedback or respond to each other.

Another opinion, Ze-Nian Li, et al (2014) described the elements of multimedia that every tool contains: text, audio, images, drawings, animation, video, and interactivity in diverse ways to be applied such as computer, gadget, camera, TV, etc. These multimodality contain digital information based on certain functions. For example, the users can type, listen, read, transfer data and watch by computer. Increasingly sophisticated, through a mobile people may use it for doing projects, trading, or just for

having fun playing a game. Response to this context, psychologists Hadiwidjodjo (2014, in Al-Ayouby, 2017; Dewi Nilam Sari, 2019), states:

Simplify Communication. Gadget is one tool which has advanced technology. So everyone can easily communicate. Building a child's creativity (Gadget provides a variety of information that can also encourage children to be more creative). Children will be easier to find all the necessary information and news to him, especially in terms of learning while playing, or playing while learning. In this age, the child was still in the future exciting to play. But not escape from a learning process that must be done.

It is convinced that gadgets as multimedia may encourage child's creativity. Creativity arrives because of the mature cognitive aspect to create, process and sum up any stimulates from outside. In psychological theories, several psychologists believe that organisms and the environment must relate to each other (e.g., Aebli, 1978, Note 2; Endler & Magnuson, 1976; Greenfield, 1976; Fischer, 1980). Furthermore, processing of child maturity is caused by a combination of organismic factors (including genes) and environmental factors (Fischer & Lazerson, in press; Peiper, 1963; Fischer, 1980). At the present, Fischer disclosed the new concept which has been recognized by 'skill theory'. Fischer theory exhibits abstract structures of skills which cognitive development runs together with a set of transformation rules that connects these structures to each other. In a short overview, Fischer confirmed skill development through 10 hierarchical levels and divided it into three tiers such as sensory-motor skills, representational skills, and abstract skills. It means that each level shows skill movement depending on an intense stimulating environment. Specifically, child-development must adjust with an environment today that is closely related with technology growth such as toys, parent's relationship and surrounding environment (Alia & Irwansyah, 2018; N, Zulkifli, Novianti, Ria; Garzia, Meyke, 2021). Even in the digital generation of children in a golden age it is hoped that they have a large opportunity to develop fully in aspect cognitive, affective and psychomotor (N, Zulkifli, Novianti, Ria; Garzia, Meyke (2021).

Department of Early Years Foundation Stage (A. Drigas, G. Kokkalia, and M. D. Lytras, 2015) elaborate in previous studies that technology supports to three major areas of learning in nursery schools: (a) build up child's ability in social and emotional development (b) incorporating sciences in broadest sense including literacy in communication, problem solving, and numeracy and creative builder (c) develop motoric skill. Several researches show that technology in multimedia today takes an important position to lead the child-development in the golden age. Good supervision from the parents bolster developmental complementment.

Besides that, A. Drigas, G. Kokkalia, and M. D. Lytras (2015) has conducted some studies to determine the validity relating with a child's cognitive development. Here elaborates that based on recent research in 2012 young children approximately 4-14 years old use media tablets. As native digital, they are quickly able to operate any digital multimedia than digital immigrants. A. Drigas et. al recognized that child's cognitive growth is touched by well-designed mobile learning and games can increase in abstract thinking, reflecting thinking, analyzing and selecting the information and scientific reasoning. In detail, cognitive maturity involves problem solving, spatial cognition, spatial representation, iconic skills and visual attention skills. What is astonishing is generally children in kindergarten get stronger in training their memory using multimedia. In Another study, when the children interacted with a Roamer robot they were able to learn the robot's idea, construct a strategy and make decisions. And a similar result, when the children learned with a Logo-based environment on an Interactive White Board, they

presented growth in problem solving strategies, conducted trials and errors, and cognitive strategies relating attention and perception. It shows significant progress in the creativity aspect.

Nowadays, besides computers the term 'gadgets' have been recognized as significant tools that cannot be separated in any activities as portable equipment. The gadget offers multi functional tasks with advanced technology such as laptops, smartphones, netbooks, tablets and many others (Frahadini, 2018). These are hoped to lead the children to be more intelligent by accessing educational applications (Fayla Sufa, Amy, Dzulfikri, 2023). YouTube is one of the ICT that people often use. YouTube users in Indonesia reached 139 million in February 2022 and Indonesian people watch YouTube 26 hours per month (Maulida, 2022). The people watch YouTube not only for entertainment and getting the information but also many of them use it to develop their skill and their knowledge. YouTube also has a special channel for children. It has been known as 'YouTube Kids' (Fayla Sufa, Amy, Dzulfikri, 2023). Fayla Sufa, Amy, Dzulfikri, 2023 argued that using this application will upgrade the children's knowledge, attitude and skill by guiding their parents.

Based on the research that has been conducted by Diah Setiani (2020) in her journal by analyzing 7 journals, she found that the use of gadgets at 3-5 years has a positive impact on cognitive development. Moreover, Dewi Nilam Sari (2019) concluded in her research that there are significant impacts of using gadgets through YouTube videos on the children's brain development. One of them, it doesn't take much time to learn the colors by using the colors application with an interesting display. Then, Sari mentioned that this process may stimulate the ability of children's imagination as well. Best way for parents is being a facilitator for them to give them the freedom to analyze, imagine and create their own. According to Handrianto this journal states that the gadget or multimedia has positive impacts in early childhood such as imagination development, training intelligence, self-confidence and cognitive ability especially in problem solving, reading and comprehending materials.

In here, the research gets so many positive impacts in using multimedia with any kind shapes and styles that can stimulate the child's cognitive maturity. Based on the study results above. Cognitive growth of children works in abstract cognitive skills so that they can comprehend the materials, able to rethink or make a decision and plan to take strategies to solve. However, the researcher encourages the parents' role to lead them to reach an achievement.

CONCLUSION

Based on the analysis of some research, the researcher has ensured that multimedia used for a child's cognitive maturity is useful for developing age. And then, through multimedia the children get complex progresses particularly in brain growth. For example, the child intensifies in problem solving, comprehending the sciences, self-confidence and the way to maximize aptitude skills. After analyzing some studies there is speed-up maturity in cognitive intelligence then non-multimedia use. So, to maximize parents' guidance, providing multimedia facilities and being fair to them is a must.

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